



## User Guide

Version 2.0

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Prepared by the Michigan Overdose Data to Action Team



# Table of Contents

Table of Contents .....	1
Change Log.....	2
Description.....	3
Terminology .....	4
Similarities and Differences to Michigan Syndromic Surveillance System .....	7
Roles and Responsibilities.....	8
Access and Jurisdiction Determination.....	10
What Can be Done in MiCelerity.....	10
ADMIN/LHJ Users .....	10
HCP Users.....	11
Functional Areas within MiCelerity .....	11
Helpful Key System Functionality (Step by Step Guidance).....	13
Functionality relevant to all users of system (ADMIN, LHJ, HCP).....	13
Events: New Event .....	13
Functionality Relevant to ADMIN and LHJ Users.....	15
Events: Event Listing .....	15
Events: Event Search.....	15
Reports: Trends .....	16
Reports: Demographics.....	17
Reports: Line Listing.....	18
Functionality Relevant to ADMIN Users .....	19
Managing the Work Queue.....	19
Facilities .....	21
Users .....	21
User Account Access Request Form .....	0

# Change Log

User Guide Version 2 Changes
Updated number of codes collected by MiCelerity
Added "Visit ID" and "Visit Sequence" definitions
Updated MiCelerity screenshots to reflect enhancements within system
Changed "Event" terminology to "Diagnosis" terminology
Added "Alerts" section describing new "Alerts" functionality

## Description

MiCelerity is an automated, real-time surveillance system designed to collect information regarding drug poisoning<sup>1</sup> events in Michigan. MiCelerity was created in 2019 with funding from the CDC aimed at addressing the opioid overdose crisis and reducing overdose morbidity and mortality. The surveillance system was designed as a repository for events deemed reportable to the Michigan Department of Health and Human Services (MDHHS) under reporting rules R 325.76, R 325.77, R 325.78, and R 325.79. These rules state that any poisonings due to the use of prescription or illicit drugs are reportable to MDHHS and must be reported to MDHHS by the health professional or health facility within five working days of request. MiCelerity removes the burden of reporting from health providers and gives MDHHS and local health jurisdictions the ability to track overdose trends and investigate emerging drug trends in real-time.

MiCelerity functions by leveraging HL7 electronic health messages in the form of Admission, Discharge, and Transfer (ADT) messages. ADT messages are triggered by certain healthcare events (such as admission to an Emergency Department (ED)) and contain information regarding demographic and diagnostic information, including ICD-10-CM codes, of the patient. In participating Michigan healthcare facilities, messages about these events are exchanged with the Health Information Exchange (HIE) organization Michigan Health Information Network (MiHIN). Among facilities that submit information to MiHIN *and* participate in the Pay for Performance program, MiHIN scans the following types of ADT messages for drug poisoning-related ICD-10-CM codes:

Code	Triggering Event
A01	Patient admit
A02	Patient transfer
A03	Patient discharge
A04	Patient registration
A05	Patient pre-admission
A06	Change an outpatient to an inpatient
A07	Change an inpatient to an outpatient
A08	Patient information update
A11	Cancel patient admit
A12	Cancel patient transfer

When a drug poisoning-related code is found in one of these messages, a copy of the message is routed into MiCelerity from MiHIN. Relevant information from each message is then retrieved and populated in each patient and drug poisoning diagnosis<sup>2</sup> record in MiCelerity. Data in MiCelerity primarily come from EDs, but other facilities such as long-term care or skilled nursing facilities may be captured in MiCelerity if they meet the above criteria.

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<sup>1</sup> Throughout this guide, the terms “overdose” and “drug poisoning” will be used interchangeably and refer to any event in which the use of a prescription or illicit drug results in a morbid condition, including death.

<sup>2</sup> Each drug poisoning-related ICD-10-CM code is considered one diagnosis. If an individual receives a code pertaining to opioid use and a code pertaining to cocaine use in a single ED visit, two diagnoses would register in MiCelerity. In MiCelerity, information can be viewed for individuals or for diagnoses, but data can only be exported at the diagnosis level.

These messages primarily come from acute care hospitals with EDs, but other types of facilities that exchange HL7 information with MiHIN are also included in the surveillance system. The coverage of MiCelerity is considered statewide, as most EDs in Michigan (~85%) exchange information with MiHIN and are captured in MiCelerity.

The current list of drug poisoning-related ICD-10-CM codes includes 2,472 codes. Relevant codes within the following over-arching categories are included:

ICD-10-CM Code Category	Category Description
F11-F16, F18-F19*	Mental and behavioral disorders due to psychoactive substance use (excluding alcohol and marijuana)
P04*	Newborn affected by noxious substances transmitted via placenta or breast milk
P96*	Neonatal withdrawal symptoms from maternal use of drugs of addiction
Q86.0*	Fetal alcohol syndrome (dysmorphic)
T36-50	Poisoning by, adverse effect of and underdosing of drugs, medicaments and biological substances
T51	Toxic effect of alcohol
*Please note that although the system automatically collects data regarding NAS, FAS, and mental and behavioral health codes related to drug use, healthcare facilities that submit data manually are only expected to report drug poisoning events to MiCelerity.	

The initial version of MiCelerity went into production in March 2020. While the system began collecting data in the test environment in October 2019, any data prior to March 2020 is considered incomplete as system changes and updates occurred between October 2019 and March 2020 that may have affected data quality. When looking at trends, analyzing data from March 2020 forward will give the most comprehensive and accurate results.

**Suggested MiCelerity citation:** Michigan Department of Health and Human Services. MiCelerity V1.2. Date of access.

## Terminology

**Admission Date**      Date the patient was admitted for care at the originating facility

**Admit Discharge Transfer (ADT) Message**      ADT messages carry patient information for HL7 communications and important information about trigger events, such as patient admit, discharge, transfer, and registration. ADT messages communicate patient demographic and visit information, as well as the reason the message is being sent. ADT messages are typically initiated by the electronic medical records or a registration application and are used to synchronize ancillary systems about the state of a patient. Every time a patient’s record is updated, an ADT message is sent.

**Age**      The age variable in MiCelerity is calculated based on the birth date of the patient and the date of admission for the corresponding drug poisoning event. If

admission date is unavailable, the date the ADT message is received is used to calculate age.

<b>Alert</b>	An alert refers to the notification generated once a preset threshold, based on some number of visits or a statistical aberration, is broken.
<b>Diagnosis</b>	One record, or line of data, within MiCelerity. Each line of data is based on one ICD-10-CM code assigned to an individual during the course of their healthcare encounter. A patient may have several overdose-related diagnosis codes for each visit and therefore may have several diagnosis records (lines of data) associated with one healthcare visit.
<b>Diagnosis ID</b>	Unique identifier for each record (line of data) in MiCelerity.
<b>Diagnosis Status</b>	Current status of the diagnosis record. A diagnosis can have a status of valid, cancelled or superseded. A diagnosis may be cancelled if the action associated with the incoming message (e.g. admit, discharge) was entered in error, or if a decision was made to not follow-through on the action. A diagnosis may be superseded when a subsequent message replaces the original message.
<b>Discharge Date</b>	Date the patient was discharged from care at the originating facility
<b>Drug Class</b>	The drug class groups individual diagnosis codes into broad categories of commonly abused or misused drugs. Drug classes include antiepileptic and sedative-hypnotics, cannabis, cocaine, ethanol, hallucinogen, opioid, sedative, tranquilizer, psychostimulants, other, and unspecified drugs.
<b>Drug Type</b>	The drug type groups individual diagnosis codes into specific categories of drugs following the ICD-10-CM organizational structure. Mental and behavioral disorders related to substance use and neonatal conditions impacted by substance exposure are classified by the drug of exposure.
<b>Entry Date</b>	The date the receipt of an ADT initiated the MiCelerity record or the date of manual entry of a MiCelerity record
<b>Facility Jurisdiction</b>	The facility jurisdiction is the local health department in which the healthcare facility that submitted the message is located. The facility jurisdiction is only available on the Trends Report page.
<b>HL7</b>	HL7 is a Standards Developing Organization accredited by the American National Standards Institute (ANSI) to author consensus-based standards representing a

broad view from healthcare system stakeholders. HL7 has compiled a collection of message formats and related clinical standards that define an ideal presentation of clinical information, and together the standards provide a framework in which data may be exchanged.

<b>ICD-10-CM Code</b>	The ICD-10-CM is a morbidity classification published by the United States for classifying diagnoses and reason for visits in all health care settings. The ICD-10-CM is based on the ICD-10, the statistical classification of disease published by the World Health Organization (WHO).
<b>Jurisdiction</b>	The jurisdiction is the local health department in which the patient lives at the time of message receipt. The jurisdiction is classified as statewide when the address of residence is missing or cannot be successfully geocoded.
<b>Message</b>	Message refers to the ADT message received by MiHIN and routed into MiCelerity that contains patient and diagnostic information. One message may contain multiple ICD-10-CM codes, therefore, multiple diagnoses (lines of data) may be generated for a single visit.
<b>MMWR Week</b>	This variable provides the Morbidity and Mortality Weekly Report (MMWR) week of the diagnosis based on the admission date. If admission date is missing, discharge date is used for the calculation. If the discharge date is missing, the received date is used. MMWR weeks are standard epidemiologic timeframes set by CDC for the purposes of standardized case count reporting.
<b>OID</b>	An OID is a globally unique ISO (International Organization for Standardization) identifier. The OIDs in MiCelerity represent the unique healthcare facility that sent the ADT message. OIDs are paths in a tree structure, with the left-most number representing the root and the right-most number representing a leaf. The OID's used in HL7 models are always numeric strings (e.g., "2.16.840.1.113883.3.1"). HL7 maintains a registry of OIDs (located at <a href="https://www.hl7.org/oid/index.cfm">https://www.hl7.org/oid/index.cfm</a> ) which contains additional information such as the OID submitter name and contact information, responsible body, and the name and text description of the facility or object identified by the OID.
<b>Patient Disposition</b>	The patient's disposition refers to the status of the patient at the time the ADT message was received. A patient may be classified as outpatient, inpatient if admitted to the hospital for care, or deceased.
<b>Patient ID</b>	Unique identifier for each patient. MiCelerity initiates a patient deduplication process for each received message so that a single patient will have the same patient ID for each diagnosis and visit.
<b>Patient Status</b>	The patient status refers to the current vital status of a patient (i.e. alive or dead). This information is captured in the Patient Identification Segment of the ADT message, which contains important information about the patient demographics.

<b>Patient Status Date</b>	Date the last update to the patient’s status was received.
<b>Poisoning Classification</b>	Diagnoses are classified by poisoning status. A diagnosis with an ICD-10-CM poisoning code (T36.0-T50.9) is classified as a probable poisoning. Diagnoses with an ICD-10-CM code within the mental and behavioral disorders due to psychoactive substance use (F11-F16, F18-F19) are classified as possible poisonings. Diagnoses with ICD-10-CM codes related to prenatal exposure or exposure through breastmilk to commonly abused medications (P04.13, P04.14, P04.16, P04.17, P96, Q86), alcohol (P04.3), or drugs of addiction (P04.4), ICD-10-CM codes for neonatal withdrawal symptoms from maternal use of drugs or addiction (P96.1), or ICD-10-CM codes for fetal alcohol syndrome (FAS) (Q86.0) are classified as ‘not a poisoning’. Diagnoses with ICD-10-CM codes for toxic effects of alcohol (T51) are classified as ‘other’.
<b>Received Date</b>	Date the ADT message was received by MiHIN from the originating facility
<b>Region</b>	The region is the emergency preparedness region in which the patient lives at the time of message receipt. Users can filter the Demographics Report by region.
<b>Visit ID</b>	Unique ID assigned to the healthcare encounter. A visit corresponds to a single healthcare encounter for an individual and may result in multiple diagnosis records if multiple drug-related ICD-10-CM codes are assigned during the visit. Admission date/time, received date/time, patient ID, and facility are used to determine unique visits.
<b>Visit Sequence</b>	Sequential number based on number of visits captured in MiCelerity for an individual. An individual’s first drug-related visit captured in MiCelerity is assigned 1, the second visit is assigned 2, and so on.

## Similarities and Differences to Michigan Syndromic Surveillance System

MiCelerity and the Michigan Syndromic Surveillance System (MSSS) are both used to track potential overdoses in Michigan. Despite some similarities, each system provides unique functionality and are used to meet different data needs. Important distinctions between these systems are described in detail below.

### Reporting mandates

MiCelerity is intended to assist healthcare providers and healthcare organizations to comply with the MDHHS administrative reporting rule for overdoses. There are no legal or administrative mandates for participation in MSSS; however, participation in MSSS allows healthcare organizations to meet certain Centers for Medicare and Medicaid Services Meaningful Use Requirements.

## Data sources and elements

MiCelerity collects clinical information from ADT messages sent from healthcare facilities. These messages contain detailed patient-level information including diagnosis codes, insurance information, patient disposition, patient demographics, and patient-identifying information. MiCelerity is the only surveillance system that captures individually identifying information on potential overdose victims. This information allows MiCelerity to link multiple visits to a single patient and enables the data user to examine longitudinal data for each suspected overdose patient. MSSS also collects clinical information from healthcare facilities, including chief complaint and patient demographics. Most hospitals that participate in MSSS also send diagnosis codes. However, MSSS does not collect any identifying information.

## Coverage

MiCelerity is designed to capture overdose events throughout the entire state of Michigan, but some facilities are unable to electronically submit data and are not currently captured in the system. Although MSSS is scalable to statewide coverage, it currently does not have full participation of all reporting entities. Healthcare providers and organizations that are not currently able to transmit data via ADT messages will be able to report overdoses to MiCelerity manually. MSSS does not have manual entry functionality.

## Case finding

MiCelerity identifies potential overdoses by comparing the diagnosis code on each incoming ADT message or manually entered case to a list of 2,472 overdose-related ICD-10-CM codes. MiCelerity captures potential overdoses of all types, not just opioid overdoses, and conditions related to overdose, such as certain mental and behavioral health disorders and neonatal abstinence syndrome (NAS). MSSS identifies potential overdoses by the submitted ICD-10-CM code, if present, and a combination of specific terms and phrases in the chief complaint field.

## Roles and Responsibilities

Three different levels of roles exist within MiCelerity, with each role having unique access levels and responsibilities. A user's jurisdiction and position determine which data are accessible and editable by him or her.

Administrative staff (**ADMIN**) are state-level staff at MDHHS that directly work on overdose surveillance; these users have unrestricted access to the system and are responsible for maintaining the user list, monitoring data quality, and reporting any issues that occur in the system. Administrative users are able to view personally identifying information for NAS and FAS data.

Local Health Jurisdiction users (**LHJ**) are jurisdiction specific staff whose work is relevant to overdose surveillance. These users are only able to access data within their jurisdiction (i.e. the patient's residence is in the user's local health jurisdiction or they were cared for in a facility within the user's local health jurisdiction) or that are not assigned to a specific local jurisdiction (these diagnoses are considered "Statewide" diagnoses and can occur when an address is missing). These users are responsible for monitoring data quality and reporting within their jurisdictions. Local health jurisdiction users are not able to view personally identifying information such as name, address, or phone number for NAS and FAS data.

Healthcare Providers (**HCP**) are users within healthcare systems tasked with reporting overdoses to MDHHS under the reporting rules previously mentioned. These users have limited access to the system

and can only access the cases that user entered. HCP users should check if their facility is a Pay for Performance participating facility and submits data to MiHIN. Otherwise, HCP users are responsible for manually entering their cases into MiCelerity. Ensuring reporting for overdose cases within their facility is the responsibility of the HCP user.

See the below table for the capabilities and responsibilities of these three distinctive user roles:

Topic	Task	ADMIN	LHJ	HCP
<b>Record Management</b>	Can create statewide <sup>a</sup> manual records	X	X	
	Can create jurisdiction specific manual records	X	X	
	Can create records only for specific health system/facility			X
	Can edit/update previously created records or records within their jurisdiction	X	X	
<b>Data Usage</b>	Can view all statewide records <sup>a</sup>	X	X	
	Can view jurisdiction specific records	X	X	
	Can only view records created/generated by facility			X
	Can download data	X	X	
	Can search for records within their jurisdiction	X	X	
	Can view personally identifying information for NAS and FAS records	X		
	Responsible for monitoring data quality	X		
<b>Administrative</b>	Can create and monitor alerts	X	X	
	Can edit users of the system	X		
	Responsible for resolving suspected duplicate records in the “Work Queue” <sup>b</sup>	X		
	Responsible for reporting system issues	X		
	Ensures reporting rules are being fulfilled for relevant patient encounters			X

<sup>a</sup>Statewide records refer to records that are not assigned to a specific local health jurisdiction, which can occur when records are missing addresses.

<sup>b</sup>Currently, de-deduplication is the responsibility of ADMIN users; in the future, this responsibility will transition to LHJ users.

Due to the highly sensitive nature of the data received by MiCelerity, and the need to keep this data private and secure, access to MiCelerity is only granted to a minimum necessary number of staff at the state and local level whose work is relevant to overdose surveillance and prevention within Michigan. Ensuring that the user’s role accurately reflects the scope of their work is essential in order to keep the information captured by MiCelerity secure; access level in the system is regularly monitored and updated.

### *Responsibility of the Healthcare Facilities for Maintaining Data Quality*

The primary purpose of MiCelerity is to help healthcare providers meet the requirements of the MDHHS administrative rules that mandate reporting of suspected drug poisonings to MDHHS within five (5) days of knowledge or suspicion of the event(s) (see R 325.76, R 325.77, R 325.78, and R 325.79 of the Michigan Administrative Code). Healthcare providers and health facilities that actively participate in MiHIN data exchange and the BCBSM Pay-for-Performance program for ADT referrals should routinely assess the quality and completeness of their automated data feeds to ensure that all suspected drug poisonings are reported to MiCelerity within the five day reporting window. Any suspected drug poisoning events that have not been received by MiCelerity through the automated data feed must be manually entered into MiCelerity by the healthcare provider.

MDHHS will periodically perform quality assurance audits at the facility level. Audit findings will be shared with the corresponding facility and MDHHS will work with individual facilities to improve reporting as needed.

### Access and Jurisdiction Determination

Access to the system will be facilitated by ADMIN users at the state. If a user has existing access to MDSS, access to MiCelerity can be obtained by filling out the User Account Access Request Form (found at the end of this user guide) and submitting the form to MDHHS-MODASurveillance@michigan.gov. Access will be granted to you by an administrative user upon approval. If a user does not have an existing MDSS account, access can be obtained by (1) filling out the User Account Access Request Form (found at the end of this user guide), (2) submitting the form to MDHHS-MODASurveillance@michigan.gov, (3) requesting access to MDSS through MILogin, and (4) checking “MiCelerity” under Systems Access Needed on the registration form. Users should register for MILogin using the Trusted 3<sup>rd</sup> Party MILogin website: <https://milogintp.michigan.gov>. All steps will need to be completed to obtain access to MiCelerity.

A maximum of **3** users will be allowed to access MiCelerity from each local health jurisdiction. Examples of appropriate users at the local health jurisdiction level include: health officers, medical directors, public health nurses, epidemiologists, or overdose program managers. If a user is inactive for 90 days, their account will be automatically deactivated (a notification will be sent prior to deactivation).

Access to the system is determined by the jurisdiction of the user. The jurisdiction of the user is based on where the user is located and their profession with regards to addressing overdoses.

The jurisdiction of an **HCP** user is the facility in which patients are treated for drug poisoning events and for which the HCP user is responsible for reporting these events. HCP users are only able to report events from their facility and are only able to view records in the system that occurred at their facility.

An **ADMIN** user’s jurisdiction is considered the state of Michigan. ADMIN users are able to see and download all records for the entire state and can create or edit any records in the system.

The jurisdiction of an **LHJ** user is the county or local health department area in which they serve. LHJ users can create or edit records in their jurisdiction, as well as statewide records (those without a specific local jurisdiction). They can view and download all records they created and those records which “occur” in their jurisdiction (i.e. the patient associated with the records either went to a healthcare facility within the LHJ jurisdiction or the patient’s address is within the LHJ jurisdiction).

Statewide users who are not ADMIN level will have similar access and roles within MiCelerity as LHJ users, with their jurisdiction being considered the state (i.e. they will have create/edit/view/download privileges for any records in the state, but they are not able to access the Work Queue or edit users of the system).

## What Can be Done in MiCelerity

### ADMIN/LHJ Users

- Export search output (diagnosis or line listing) in pdf or csv
  - Search by desired criteria (e.g., time, diagnosis or patient, geographic area)
  - Save search criteria for future use
- Manage key information about records, including
  - Contact information (e.g., address, phone number, email)

- Basic demographics (e.g., age, race, ethnicity)
- Diagnosis information (e.g., ID, status, drug type)
- Facility information (e.g., Facility name, county)
- Add new records
- View and track trends and demographics in drug poisoning diagnoses
  - Modify search criteria to meet your needs
- Share data across jurisdictions for multijurisdictional monitoring
- De-duplicate records and resolve issues (only designated ADMIN users)
- Edit user info, roles and privileges and view user activity (only ADMIN users)

## HCP Users

- View records within their healthcare facility
  - Search by desired criteria (e.g., time, diagnosis or patient, geographic area)
  - Save search criteria for future use
- Enter new diagnoses and key information about new records, including
  - Contact information (e.g., address, phone number, email)
  - Basic demographics (e.g., age, race, ethnicity)
  - Event information (e.g., ID, status, drug type)
  - Facility information (e.g., Facility name, county)

## Functional Areas within MiCelerity

### Data (formerly Events)

The Data tab allows the user to search for or add specific incidents in MiCelerity. The New Diagnosis sub-tab is used to add all pertinent information for a new record, including identifiers, demographic information, geographic information and clinical information.

The Diagnosis Search sub-tab allows the user to search for specific diagnoses that have already been entered based on clinical information, patient identifiers, time period or geography. Searches conducted under the Diagnosis Search can be saved for future use.

The Diagnosis Listing sub-tab displays diagnosis records in the system. The list of diagnoses displayed can be based on a saved search constructed under Diagnosis Search, or the list can be filtered using the filter bars under each variable in Diagnosis Listing. Information under Diagnosis Listing can be exported from the system using the Export button.

### Admin

The Admin tab is used for checking or updating user information and resolving possible duplicate indicators for the same patient. The Work Queue sub-tab allows the user to go through data indicating possible duplicate patient indicators. The user can compare the identifiers and decide whether or not the messages relate to the same person, selecting Merge or No Merge as appropriate to release those messages from the work queue. Only users with administrative level access can access the Work Queue.

The Facilities sub-tab is for maintaining information on participating hospitals and other facilities. Admin-level users can update facilities names as needed.

The Users sub-tab is for maintaining user information. Users can update their names, emails or activity status as needed. Admin-level users can update the access level of users.

### Reports

The Reports tab allows the user to look at aggregate information and export datasets. The Line Listing sub-tab enables the user to export a dataset for a specific time period, geographic area and/or clinical criteria. The line listing exported from this tab encompasses the same events that can be exported under the “Data” tab but has a reduced variable list for quicker downloading and simpler analyses. It also allows the user to choose which variables will be exported, if not all of the variables in the system are desired. For datasets created in the Line Listing sub-tab, each line, or “diagnosis”, in the data set refers to one, overdose related, ICD10CM diagnosis code assigned during a healthcare encounter. If a visit to the emergency department involved more than one drug-related code it will have multiple associated lines/diagnoses in the dataset.

The Demographics sub-tab allows the user to export data aggregated by demographic groups. For example, if the user chooses to track drug types by sex, a report will list the number of females and the number of males with codes for each drug type. Like the Line Listing sub-tab, it allows the user to specify a time period, a geographic area and clinical criteria. The user may select one or two demographic variables for aggregation.

The Trends sub-tab provides a tool for visualizing drug-related healthcare visits over time. The user selects a time period of interest, as well as a health department catchment area and a drug class. Pressing the update button will result in the updating of the main graph to show frequencies of visits related to the selected drug class in residents of the selected catchment area. The Trends sub-tab also has a section called “Visit Counts by Facilities.” This gives the number of total visits related to drug-related healthcare visits in each hospital or other facility in the selected time period.

## **Alerts**

The alerts tab allows users to create and manage rules for generating alerts indicating increases in drug poisoning diagnoses. All users of the system are able to create and manage alerts. The “Rules” sub-tab allows users to see all rules created by any user. From the listing of rules, users can click on the rule ID to view rule details and edit rules. The rules listing can be sorted or filtered by the various columns present.

The “New Rule” sub-tab allows users to create and save a new rule. Users will need to select their UserID and input the email address at which they would like to receive alert notifications. Users can choose to create alerts for specific jurisdictions, facilities, poisoning classifications, diagnosis codes, drug types, or drug classes. An alert can either be based on a raw count or a statistical aberration. If the user chooses “Visit Counts” as the alert type, they will set a visit count threshold over a period of days (time span). If the visit count is exceeded during the specified time span, the user will receive an alert email. If the user chooses “Statistical Aberration” as the alert type, the user can then specify the number of standard deviations above the mean they would like to receive an alert for. Mean and standard deviation are calculated over a lookback period of 84 days. The user can specify the time span for which the number of overdoses are compared to the statistical calculation. If the number of overdoses over the designated time span exceeds the specified number of standard deviations above the mean over the past 84 days, an alert email will be sent to the user.

The “My Alerts” sub-tab shows all alerts generated by MiCelerity for the user. The sounded alerts listing can be sorted or filtered by the various columns present and can be exported for analysis.

# Helpful Key System Functionality (Step by Step Guidance)

## Functionality relevant to all users of system (ADMIN, LHJ, HCP)

### Data: New Diagnosis

In addition to the Diagnoses that are automatically transmitted to MiCelerity, Diagnosis records may be created manually by the user. This can be done by going to Data, then selecting the New Diagnoses tab. Data entry fields that are highlighted in red (1) are required fields and must be entered. Data fields that are grey are automatically populated; data cannot be manually entered in these fields. The “New Notes” section refers to any information that is critical to interpreting the submitted data (e.g. “patient is homeless” or “patient overdosed while admitted for a different health condition”) rather than clinical notes regarding the record.

Multiple ICD-10-CM codes that are associated with the same visit can be entered at the same time (2). To select an ICD-10-CM code, first filter the data by “Drug Type”, then select the relevant description. The corresponding code will then appear in the ICD-10-CM section (2). You can select multiple codes within one drug type or select a different drug type to add a different drug ICD-10-CM code.

**New Diagnosis**

\* Required field

Facility\*: --Facility--

Description\*:  Poisoning by heroin, accidental (unintentional), initial encounter  
 Poisoning by heroin, accidental (unintentional), subsequent encounter  
 Poisoning by heroin, accidental (unintentional), sequela  
 Poisoning by heroin, intentional self-harm, initial encounter

Drug Type\*: Heroin

ICD-10-CM Code\*: T40.5X4A, T51.91XA, T40.1X1A

Admission Date\*: [Calendar Icon] Time(hh:mm a) [Clock Icon]

Discharge Date\*: [Calendar Icon] Time(hh:mm a) [Clock Icon]

**Patient Information**

First Name\*: [Red Box 1]

Last Name\*: [Red Box 1]

Middle Name: [Grey Box]

Patient Status\*: Alive [Red Box 1]

Patient Status Date: [Grey Box]

Patient Disposition\*: --Patient Disposition-- [Red Box 1]

Street: [Grey Box]

City: [Grey Box]

County: --County-- [Grey Box]

State: Michigan [Grey Box]

Zip: [Grey Box]

Mode of Arrival: --Mode of Arrival-- [Grey Box]

Home Phone: ⓘ  Ext: ⓘ  Other Phone: ⓘ  Ext: ⓘ

### Demographics

<p><b>Race*:</b> ⓘ</p> <ul style="list-style-type: none"><li><input type="checkbox"/> American Indian or Alaska Native</li><li><input type="checkbox"/> Asian</li><li><input type="checkbox"/> Black/African American</li><li><input type="checkbox"/> Caucasian</li><li><input type="checkbox"/> Hawaiian or Pacific Islander</li><li><input type="checkbox"/> Other</li><li><input type="checkbox"/> Unknown</li></ul>	<p><b>Ethnicity*:</b> ⓘ</p> <ul style="list-style-type: none"><li><input type="radio"/> Hispanic or Latino</li><li><input type="radio"/> Not Hispanic or Latino</li><li><input type="radio"/> Unknown</li></ul>	<p><b>Sex*:</b> ⓘ</p> <ul style="list-style-type: none"><li><input type="radio"/> Female</li><li><input type="radio"/> Male</li><li><input type="radio"/> Other</li><li><input type="radio"/> Unknown</li></ul>
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1

Date of Birth: ⓘ  Age: ⓘ  Age Unit:

### Parent/Guardian

First Name: ⓘ  Last Name: ⓘ  Middle Name: ⓘ

### New Notes if Applicable ⓘ

## Functionality Relevant to ADMIN and LHJ Users

### Data: Diagnosis Listing

The Diagnosis Listing page will display all diagnosis records currently in the system. Each ICD-10-CM diagnosis code entered for an individual will produce a row in the Diagnosis Listing table. Initially, records in the Diagnosis Listing table are automatically sorted by admission date in descending order.

Several options exist for searching for records. A previously saved search can be selected from the Saved Search List (1) (see Diagnosis Search section for details on creating a Saved Search), or records in the table can be filtered and sorted with the available columns in the table (2 and 3). The Diagnosis Listing table can be exported (4) to a csv file.

The screenshot shows the MiCelerity interface for the Diagnosis Listing page. The top navigation bar includes 'MiCelerity', 'Data', 'Admin', and 'Reports'. The main header has 'Diagnosis Listing', 'Diagnosis Search', and 'New Diagnosis'. A 'Saved Search List' dropdown is set to 'All Valid Diagnoses', showing 'Displaying results 141-150 of 19129 found'. Below this are filter options for 'Admission Date', 'Diagnosis Status', 'ICD-10 Code', 'Drug Class', 'Patient Name', 'Facility', and 'Jurisdiction'. A table of results is displayed with columns for date, status, code, class, patient name, facility, jurisdiction, and diagnosis ID. At the bottom, there is a pagination control with a 'Go To Page' button.

1 Select a saved search from the menu (see Diagnosis Search Section)

2 Select search parameters from available options

3 After selecting parameters, click 'Sort/Filter'. To reset click 'Clear Filter'

4 Export a CSV file of the records listed in the table

5 Select a page you would like to view, or enter a page number and click 'Go To Page'

Admission Date	Diagnosis Status	ICD-10 Code	Drug Class	Patient Name	Facility	Jurisdiction	Diagnosis ID
12/04/2019	Valid	T40.601A	Opioid		PROMEDICA BIXBY HOSPITAL	Lenawee County	2370699
12/04/2019	Valid	T50.901A	Unspecified		MIDMICHIGAN MEDICAL CENTER - CLARE	Central Michigan District	2370631
12/04/2019	Valid	T40.7X1A	Cannabis		BORGESS PIPP HOSPITAL	Allegan County	2371010
12/04/2019	Valid	F11.99	Opioid-related disorder		PROMEDICA BIXBY HOSPITAL	Lenawee County	2368542
12/04/2019	Valid	F11.10	Opioid-related disorder		BEAUMONT HOSPITAL GROSSE POINTE	Detroit City	2371188
12/04/2019	Valid	T50.902A	Unspecified		BEAUMONT HOSPITAL FARMINGTON HILLS (FORMERLY BOTSFORD HOSPITAL)	Detroit City	2368460
12/04/2019	Valid	T50.902A	Unspecified		ST. MARY'S MERCY MEDICAL CENTER	Kent County	2373109
12/04/2019	Valid	T43.211A	Other		ST. MARY'S MERCY MEDICAL CENTER	Kent County	2373099
12/04/2019	Valid	F11.20	Opioid-related disorder		BEAUMONT HOSPITAL GROSSE POINTE	Detroit City	2368274
12/04/2019	Valid	F11.20	Opioid-related disorder		MUNSON MEDICAL CENTER	District 10	2368253

### Data: Diagnosis Search

In the Diagnosis Search tab there are more filter options available (1). A user can enter the parameters that they are interested in searching and click the search button at the bottom of the page to view the results. The user also has the option to create a Saved Search (2- 5). After selecting the desired parameters, enter a name for the created search (2) (example: January Opioids in XX County) and hit the save button (3). Once the search has been saved, it will be available in the Saved Search List (4). The user can select a Saved Search from the Saved Search List, then click the Search button (5) to view the results.

(1) Select search criteria from the available options.  
 (2) Name the search and click (3) 'Save'. The Named Search you created will appear in the (4) Saved Search List, and can then be used by selecting it in the menu and clicking (5) 'Search'.

## Reports: Trends

The home page for MiCelerity is the Trends tab within the Reports tab. The top half of the page shows the Visit Counts graph. At the bottom of the Trends page is the Visits by Facility table. The number of visits in a facility during a selected time range, either a number of days or between specific dates, will be displayed. It is important to note that the time range for the graph and the table are independent of each other. Changing the time range for one will not affect the other.

(1) The MiCelerity Homepage is the "Trends" tab under 'Reports'

(2) Select parameters that you want displayed on the Visit Count graph

(3) Click the 'Update' button to update the Visit History graph with the parameters you specified

**4** (4) At the bottom of the Home page is the 'Visit Counts by Facilities' Section

**5** Time Range: Last 7 Days; From Date (mm/dd/yyyy): 11/28/2019; To Date (mm/dd/yyyy): 12/05/2019

**5** Data can be viewed within a range of days, or between two specified dates

Facility	Facility Jurisdiction	Facility County	Total Messages Received
HFHN TROY	Oakland County	Oakland	6
BURLINGTON	Statewide		3
HFM FRASER	Macomb County	Macomb	1
KITH HAVEN	Statewide		4
HFHN CANTON	Wayne County	Wayne	4
HFHN TAYLOR	Wayne County	Wayne	9
HFVY OB GYN	Statewide		1
BRIARWOOD 03	Statewide		3
BRIARWOOD 05	Statewide		3
BRIARWOOD 10	Statewide		1

**6** Each column can be sorted in ascending or descending order

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 [Next>>] [Last>]

**7** Select a page you would like to view, or enter a page number and click 'Go To Page'

## Reports: Demographics

The Demographics tab can be used to generate aggregate reports with parameters selected by the user. Reports may be exported as a PDF or CSV file. Only the parameters selected on this page will be present in the exported aggregate report.

MiCelerity | Data | Admin | **Reports** | Logout

Line Listing | **Demographics** | Trends

### Demographics

**1** Time Period

Month: December 2019  
 Week (ww-yyyy): 49-2019 (12/01/2019 to 12/07/2019)  
 From Date (mm/dd/yyyy): 12/05/2019 To Date (mm/dd/yyyy): 12/05/2019

Use the radio buttons to specify (1) the desired time period, (2) whether the selected time period is based on the received, admission, or discharge date, and (4) either Drug Type or Drug Class of interest. Use the dropdown menus (3) to select the diagnosis and patient options

**2** Time Period Based On

Received Date  Admission Date  Discharge Date

**3** Diagnosis and Patient

Diagnosis Status: [Dropdown] Patient Status: --Patient Status--  
 Poisoning Classification: Not a poisoning, Other, Possible, Probable

**4** Drug Type: 4-Aminophenol derivatives, Alcohol, Alpha-adrenoreceptor antagonists

Drug Class: Antiepileptic and sedative-hypnotic, Cannabis, Cocaine, Ethanol

(5) Where radio buttons are present, only one option may be selected at a time. All menu items associated with a button will be greyed out and unavailable until the radio button is selected.

**5** Geographic Area

- State Wide **Default Selection**
- County
  - Alcona
  - Alger
  - Allegan
  - Alpena
- Region
  - 1
  - 2 North
  - 2 South
  - 3
- Jurisdiction
  - Allegan County
  - Barry-Eaton
  - Bay County
  - Benzie-Leelanau
- Zip
- City
  - Adrian
  - Albion
  - Algonac
  - Allegan

**6** Demographics Variable 1

Sex  Age Group  Race  Ethnicity

**6** Demographics Variable 2

Sex  Age Group  Race  Ethnicity  None

Select up to 2 demographic variables to stratify the report (6)

**7** PDF Report CSV Report

(7) Reports can be exported as PDF or CSV files. Results are in aggregate, based on the demographic variables selected. (E.g. women aged 25-34: 22 messages received for drug class opioids in region 1 in the last 7 days)

## Reports: Line Listing

The Line Listing tab can be used to generate reports with line level data. Reports can be exported as a PDF or CSV file.

MiCelerity Data Admin **Reports** Logout

**Line Listing** Demographics Trends

**1** Time Period

Month: December Year: 2019

From Date (mm/dd/yyyy): 12/05/2019 To Date (mm/dd/yyyy): 12/05/2019

Use the radio buttons to specify (1) time period, (2) what the time period is based on, and (4) the geographic area. Note that the default selection for geographic area is State. Use the dropdown menus (3) to select the Diagnosis and Patient Status.

**2** Time Period Based On

Entry Date  Received Date  Admission Date  Discharge Date

**3** Event and Patient Status

Diagnosis Status:  Patient Status:

**4** Geographic Area

- County:
  - Alcona
  - Alger
  - Allegan
  - Alpena
- Jurisdiction:
  - Allegan County
  - Barry-Eaton
  - Bay County
  - Benzie-Leelanau
- State: **Default Selection**
  - Michigan
- Zip Code:
- Facility:
  - 2:16.840.1.113883.3.137.4.4000.10
  - 2:16.840.1.113883.3.137.4.4000.40
  - 2:16.840.1.113883.3.137.4.4000.60
  - 2:16.840.1.113883.3.3823.402001
- City:
  - Adrian
  - Albion
  - Algonac
  - Allegan

Where radio buttons are present, only one option (5) may be selected at a time. All menu items associated with a button will be greyed out and unavailable until the radio button associated with them is selected

5 **Event**

ICD-10 Code:  
 F11.10  
 F11.120  
 F11.121  
 F11.122

Poisoning Classification:  
 Not a poisoning  
 Other  
 Possible  
 Probable

Drug Type:  
 4-Aminophenol derivatives  
 Alcohol  
 Alpha-adrenoreceptor antagonists  
 Aminoglycosides

Drug Class:  
 Antiepileptic and sedative-hypnotic  
 Cannabis  
 Cocaine  
 Ethanol

**Display Column**

Event ID

Event Status

Drug Type

ICD-10 Code

Entry Date

Admission Date

Discharge Date

Received Date

Intentionality

Name

Patient Status

Address

County

Jurisdiction

Date of Birth

Age

Race

Ethnicity

Sex

Facility

Poisoning Classification

Drug Class

Select variables to be included in the report (6)
 7
PDF Report
CSV Report

(7) Reports can be exported as PDF or CSV files. Line listed results will be shown based on parameters selected. (E.g. *Jane Doe; 1234 Address Ln, City, MI; Hospital Facility; Admitted 12/1/2019; Drug Type Present; etc.*)

## Functionality Relevant to ADMIN Users

The Admin and its three subtabs (Work Queue, Facilities, and Users) are only available to users with administrator privileges.

### Managing the Work Queue

The Work Queue tab will display a list of potential duplicate messages received by the system that are not able to be automatically resolved. An Admin user is able to manually resolve the pending work queue items.

MiCelerity
Data
Admin
Reports
Logout

Work Queue
Facilities
Users

Pending Work Queue

Date Received	Patient Name	Facility	Jurisdiction	Type	ICD-10-CM Code
<div style="border: 1px solid #ccc; padding: 2px;">           From: <input type="text"/> </div> <div style="border: 1px solid #ccc; padding: 2px;">           To: <input type="text"/> </div>	<div style="border: 1px solid #ccc; padding: 2px;">           First Name: <input type="text"/> </div> <div style="border: 1px solid #ccc; padding: 2px;">           Last Name: <input type="text"/> </div>	<div style="border: 1px solid #ccc; padding: 2px;">           0 Select         </div>	<div style="border: 1px solid #ccc; padding: 2px;">           0 Select         </div>		
No Items in Work Queue					

(1) Can search for items in the Pending Work Queue using the drop-down boxes. Select search parameters from the available options. Each column may be sorted in ascending or descending order.

2 Sort/Filter  
 Clear Filter

(2) Click on 'Sort/Filter' to apply your selections. To return to the default, select 'Clear Filter'.

(3) Line-listing of messages that need to be resolved will appear in the Pending Work Queue table at the bottom of the page

To resolve items that appear in the Pending Work Queue table, click the 'Resolve' button at the end of the row of the record of interest. The Patient Deduplication screen will pop up. Look at the available information for the patient(s) in the rows and decide if the records should be merged or not. If the record is confirmed as a duplicate, click the 'Merge' button. If the record is determined to not be a duplicate, click the 'No Merge' button. If 'Merge' or 'No Merge' are selected, a confirmation message will be displayed telling the user that the queue item has been resolved. To leave the Patient Deduplication screen without making any changes, click the 'Cancel' button. If 'Cancel' is selected, the record will remain in the Pending Work Queue.

[MiCelerity](#) | [Data](#) | [Admin](#) | [Reports](#) | [Logout](#)

[Work Queue](#) | [Facilities](#) | [Users](#)

### Pending Work Queue

Displaying results 1-10 of 318 found

Date Received	Patient Name	Facility	Jurisdiction	Type	ICD-10-CM Code	
From: <input type="text"/>	First Name: <input type="text"/>	0   Select	0   Select			Sort/Filter
To: <input type="text"/>	Last Name: <input type="text"/>					Clear Filter
02/11/2020	Patient Name 1	Facility Name 1	Statewide	Geocode	T50.901A	Resolve
02/11/2020	Patient Name 2	Facility Name 2	Genesee County	Patient Dedup	F12.988	Resolve
02/11/2020	Patient Name 3	Facility Name 3	Jackson County	Patient Dedup	T45.8X1D	Resolve
02/11/2020	Patient Name 4	Facility Name 4	Macomb County	Patient Dedup	T50.901A	Resolve
02/11/2020	Patient Name 4	Facility Name 4	Macomb County	Patient Dedup	T50.901A	Resolve

(1) Click the 'Resolve' button of the record you would like to check for de-duplication.

(2) Compare the available information for the patient to decide if the record is a duplicate or not.

[MiCelerity](#) | [Data](#) | [Admin](#) | [Reports](#) | [Logout](#)

[Line Listing](#) | [Demographics](#) | [Trends](#)

### Patient Deduplication

Merge	Score	First Name	Middle Name	Last Name	Date of Birth	Gender
X		First Name 1	[Blank]	Last Name 1	DOB 1	Male
<input type="radio"/> 5432617	77.0%	First Name 1	Middle Initial	Last Name 1	DOB 2	Male

3 | [Merge](#) | [No Merge](#) | [Cancel](#)

- Resolve the Record
  - If the record is confirmed as a duplicate click the 'Merge' button to merge the records.
  - If the record is not a duplicate click the 'No Merge' button.
  - Either of these actions will resolve the record and return you to the Pending Work Queue screen, and the record will no longer be listed in the queue.
- Make no Changes
  - Click the 'Cancel' button to return to the Pending Work Queue screen without making any changes. The record will still be listed in the queue.

(4) Once the record has been resolved, the user will be returned to the Pending Work Queue and a confirmation message will appear at the top in green.

[MiCelerity](#) | [Data](#) | [Admin](#) | [Reports](#) | [Logout](#)

[Work Queue](#) | [Facilities](#) | [Users](#)

### Pending Work Queue

Queue Item has been resolved for patient 5937038 and event 5937049. 3 other hidden queue item(s) were resolved for the patient.

Displaying results 1-10 of 317 found

Date Received	Patient Name	Facility	Jurisdiction	Type	ICD-10-CM Code	
From: <input type="text"/>	First Name: <input type="text"/>	0   Select	0   Select			Sort/Filter
To: <input type="text"/>	Last Name: <input type="text"/>					Clear Filter
02/11/2020	Patient Name 1	Facility Name 1	Statewide	Geocode	T50.901A	Resolve
02/11/2020	Patient Name 2	Facility Name 2	Genesee County	Patient Dedup	F12.988	Resolve
02/11/2020	Patient Name 3	Facility Name 3	Macomb County	Patient Dedup	T50.901A	Resolve

## Facilities

The Facilities tab displays a list of available facilities in MiCelerity. Users can sort existing facilities in the list, and facility information may be edited on this page by an administrative user.

The screenshot shows the 'Facilities' tab in the MiCelerity Admin interface. The page displays a table of facilities with columns for Date Added, Display Name, and ISO. The table is filtered to show 10 results out of 871. The following callouts are present:

- 1**: Points to the 'Date Added' filter dropdown.
- 2**: Points to the 'Display Name' search input field.
- 3**: Points to the 'Sort/Filter' button.
- 4**: Points to the 'Edit' button in a row.
- 5**: Points to the 'Go To Page' button.

Annotations on the page include: (1) Select filters and sorting options to search facilities. (2) Type in the name of a specific facility to search for it. (3) Click on 'Sort/Filter' to apply your selections. To return to the default, select 'Clear Filter'. (4) To edit the information for a facility, click the Edit button in the row of that facility. (5) Select a page you would like to view, or enter a page number and click 'Go To Page'.

To edit the information of a facility in the list, select the 'Edit' button in the row of that facility.

The screenshot shows the 'Facility' edit form in the MiCelerity Admin interface. The form contains the following fields:

- ISO: 2.16.840.1.113883.3.5416.1.4670
- Facility Name: Facility Name
- Street Address: 1234 Address Ln.
- City: City
- County: County
- State: Michigan
- Zip:
- Contact Person:
- Contact Phone:

The following callouts are present:

- 1**: Points to the 'Facility Name' input field.
- 2**: Points to the 'Save' button.

Annotation: (1) Make all desired edits to the facility information, (2) then click Save to apply the edits.

## Users

Similar to the Facilities tab, the Users tab displays all users in MiCelerity.

1 Select filters and sorting options to search Users.

2 Can type in the name of a specific person or username to search for it.

3 Click on 'Sort/Filter' to apply your selections. To return to the default, select 'Clear Filter'.

4 To edit the information for a facility, click the Edit button in the row of that facility.

To edit the information of a user in the list, select the 'Edit' button in the row of that user (4 in the image above). Users can update their names, emails or activity status as needed. Only Admin-level users can update the access level of Users in the 'MiCelerity Role' field.

1 Enter/ update the User Info. Fields highlighted in red are required.

2 Be sure that the 'Active' box is checked for all active users. If a user becomes inactive, uncheck the box and save the changes.

3 Only a user with administrator rights may update the MiCelerity Role.

4 Click the Save button to save all changes. Click the Cancel button if you wish to cancel your changes.

5 Can view user activity. Select parameters in the Time, Action, and/ or Entry By fields, and click the Filter button.

6 User activity will be line-listed in the table at the bottom of the page.

## User Account Access Request

MiCelerity is the [drug poisoning reporting system](#) for MDHHS. Each qualified organization can request up to three MiCelerity User Accounts. Please submit your completed form to [MDHHS-MODASurveillance@michigan.gov](mailto:MODASurveillance@michigan.gov) for approval.

### Requestor Information

Do you have an active MDSS account?  Yes  No

Account type request:  Local health department user  Healthcare facility user  MDHHS user

Organization: \_\_\_\_\_

Name: \_\_\_\_\_

Title/role: \_\_\_\_\_

Email address: \_\_\_\_\_

Work phone: \_\_\_\_\_

Provide a brief description of why you are requesting access to MiCelerity:

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Access Determination: MDHHS Use Only

MiCelerity Admin name: \_\_\_\_\_

Approved:  Yes  No

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Request completed:  Yes  No  Not applicable

Date completed: \_\_\_\_\_